

CLAIMS

- [c1] 1. An aircraft comprising:
a fuselage, the fuselage having:
a first fuselage portion with a first cross-sectional area;
a second fuselage portion positioned aft of the first fuselage portion,
the second fuselage portion having a second cross-sectional
area that is less than the first cross-sectional area; and
a third fuselage portion positioned aft of the second fuselage portion,
the third fuselage portion having a third cross-sectional area
that is greater than the second cross-sectional area;
a wing fixedly attached to the fuselage and extending outwardly from a
position at least proximate to the second fuselage portion, the wing
having a leading edge region; and
a propulsion system fixedly attached to the wing, the propulsion system
having an air inlet positioned aft of the leading edge region of the
wing.
- [c2] 2. The aircraft of claim 1 wherein the propulsion system is at least
approximately laterally aligned with the second fuselage portion.
- [c3] 3. The aircraft of claim 1 wherein the wing further includes a trailing
edge region, and wherein the propulsion system further includes an exhaust gas
outlet positioned aft of the trailing edge region of the wing.
- [c4] 4. The aircraft of claim 1, further comprising a landing gear pivotally
attached to the wing, the landing gear including a wheel truck movable between a
static deployed position for movably supporting the aircraft on the ground and a
static retracted position for reducing aerodynamic drag in flight, wherein the static
deployed position of the wheel truck is aft of the air inlet.

- [c5] 5. The aircraft of claim 1 wherein the leading edge region of the wing includes an outboard leading edge defining a first sweep angle with respect to the fuselage, and wherein the wing further includes an inboard leading edge, the inboard leading edge extending forward from the outboard leading edge to at least generally define a second sweep angle with respect to the fuselage, the second sweep angle being higher than the first sweep angle.
- [c6] 6. The aircraft of claim 1 wherein the wing leading edge region includes a wing leading edge, and wherein the air inlet of the propulsion system is positioned aft of the wing leading edge.
- [c7] 7. The aircraft of claim 1 wherein the fuselage, wing, and propulsion system are arranged to provide the aircraft with a generally smooth, monotonically changing, cross-sectional area distribution.
- [c8] 8. The aircraft of claim 1, further comprising at least first and second stabilizer surfaces extending outwardly from the third fuselage portion.
- [c9] 9. The aircraft of claim 1, further comprising at least first and second stabilizer surfaces extending outwardly from the third fuselage portion, the second stabilizer surface being positioned at least generally aft of the first stabilizer surface.
- [c10] 10. The aircraft of claim 1, further comprising:
 a vertical stabilizer extending outwardly from the third fuselage portion; and
 a horizontal stabilizer extending outwardly from the third fuselage portion,
 the horizontal stabilizer being positioned at least generally aft of the
 vertical stabilizer.
- [c11] 11. The aircraft of claim 1 wherein the wing further includes a trailing edge region, and wherein the aircraft further comprises a fuel tank portion

positioned at least approximately within the third fuselage portion aft of the wing trailing edge region.

- [c12] 12. The aircraft of claim 1, further comprising:
a vertical stabilizer extending outwardly from the third fuselage portion; and
a fuel tank portion positioned at least approximately within the third fuselage portion proximate to the vertical stabilizer.
- [c13] 13. The aircraft of claim 1 wherein the fuselage, wing, and propulsion system are configured to operate at a cruise Mach number of about .98 or less.
- [c14] 14. An aircraft comprising:
a fuselage, the fuselage including:
a first fuselage portion having a first maximum dimension transverse to a longitudinal axis of the aircraft;
a second fuselage portion positioned aft of the first fuselage portion, the second fuselage portion having a second maximum dimension transverse to the longitudinal axis of the aircraft, the second maximum dimension being less than the first maximum dimension; and
a third fuselage portion positioned aft of the second fuselage portion, the third fuselage portion having a third maximum dimension transverse to the longitudinal axis of the aircraft, the third maximum dimension being greater than the second maximum dimension;
a wing fixedly attached to the fuselage and extending outwardly from a position at least proximate to the second fuselage portion, the wing having a leading edge region; and

a propulsion system fixedly attached to the wing, the propulsion system having an air inlet positioned aft of the leading edge region of the wing.

[c15] 15. The aircraft of claim 14 wherein the first maximum dimension, the second maximum dimension, and the third maximum dimension are parallel to a yaw axis of the aircraft.

[c16] 16. The aircraft of claim 14 wherein the first fuselage portion can accommodate at least six passenger seats positioned transversely across the first fuselage portion, and wherein the second fuselage portion can accommodate at least five passenger seats positioned transversely across the second fuselage portion.

[c17] 17. The aircraft of claim 14 wherein the first fuselage portion includes first and second passenger aisles separating first, second, and third passenger seat sections.

[c18] 18. The aircraft of claim 14, further comprising a passenger deck extending at least within the first, second, and third fuselage portions.

[c19] 19. The aircraft of claim 14, further comprising:
a first passenger deck extending at least within the first, second, and third fuselage portions; and
a second passenger deck positioned below the first passenger deck.

[c20] 20. The aircraft of claim 14, further comprising:
a passenger deck extending at least within the first, second, and third fuselage portions; and
a second deck positioned below the passenger deck, wherein the second deck is configured to carry at least two LD-3 cargo containers.

[c21] 21. The aircraft of claim 14 wherein the fuselage, wing, and propulsion system are configured to operate at a cruise Mach number of about .98 or less.

[c22] 22. The aircraft of claim 14 wherein the leading edge region of the wing includes a wing leading edge, and wherein the air inlet of the propulsion system is positioned aft of the wing leading edge.

[c23] 23. A transport aircraft comprising:
a fuselage, the fuselage having:

a first fuselage portion with a first cross-sectional area configured to accommodate at least six passenger seats positioned transversely across the first fuselage portion;

a second fuselage portion positioned aft of the first fuselage portion, the second fuselage portion having a second cross-sectional area that is less than the first cross-sectional area and configured to accommodate at least five passenger seats positioned transversely across the second fuselage portion;
and

a third fuselage portion positioned aft of the second fuselage portion, the third fuselage portion having a third cross-sectional area that is greater than the second cross-sectional area and configured to accommodate at least six passenger seats positioned transversely across the third fuselage portion;

a wing configured to operate efficiently at near-sonic airspeeds, the wing being fixedly attached to the fuselage and extending outwardly from a position at least proximate to the second fuselage portion, the wing having a leading edge region and a trailing edge region; and

a propulsion system fixedly attached to the wing, the propulsion system having an air inlet positioned aft of the leading edge region of the

wing, the propulsion system further having an exhaust gas outlet positioned aft of the trailing edge region of the wing.

[c24] 24. The transport aircraft of claim 23 wherein the first fuselage portion has a first maximum dimension transverse to a longitudinal axis of the aircraft, wherein the second fuselage portion has a second maximum dimension transverse to the longitudinal axis of the aircraft, the second maximum dimension being less than the first maximum dimension, and wherein the third fuselage portion has a third maximum dimension transverse to the longitudinal axis of the aircraft, the third maximum dimension being greater than the second maximum dimension.

[c25] 25. The transport aircraft of claim 23 wherein the first fuselage portion has a first maximum dimension parallel to a yaw axis of the aircraft, and the second fuselage portion has a second maximum dimension parallel to the yaw axis of the aircraft, the second maximum dimension being less than the first maximum dimension.

[c26] 26. The transport aircraft of claim 23, further comprising:
a first passenger deck extending at least within the first, second, and third fuselage portions; and
a second passenger deck positioned below the first passenger deck and extending at least within the first fuselage portion.

[c27] 27. The transport aircraft of claim 23 wherein wing further includes a wing spar box, and further comprising a landing gear pivotally attached to the wing at least generally aft of the wing spar box, the landing gear including a wheel truck movable between a static deployed position for movably supporting the aircraft on the ground and a static retracted position for reducing aerodynamic drag in flight, wherein the static deployed position of the wheel truck is aft of the air inlet.

[c28] 28. The transport aircraft of claim 23 wherein wing further includes a wing spar box, and further comprising a landing gear pivotally attached to the wing at least generally aft of the wing spar box, the landing gear including a wheel truck movable between a static deployed position for movably supporting the aircraft on the ground and a static retracted position for reducing aerodynamic drag in flight, wherein the wheel truck is stored in a wheel well positioned at least generally in the second fuselage portion when the wheel truck is in the static retracted position.

[c29] 29. A method for manufacturing an aircraft, the method comprising:
providing a first fuselage portion having a first cross-sectional area;
attaching a second fuselage portion to the first fuselage portion aft of the first fuselage portion, the second fuselage portion having a second cross-sectional area that is less than the first cross-sectional area;
attaching a third fuselage portion to the second fuselage portion aft of the second fuselage portion, the third fuselage portion having a third cross-sectional area that is greater than the second cross-sectional area;
attaching a wing at least proximate to the second fuselage portion, the wing having a leading edge region and extending at least generally outward from the second fuselage portion; and
attaching a propulsion system to the wing, the propulsion system having an air inlet positioned aft of the leading edge region of the wing.

[c30] 30. The method of claim 29 wherein the wing leading edge region includes a wing leading edge, and wherein attaching a propulsion system to the wing includes positioning the air inlet of the propulsion system aft of the wing leading edge.

[c31] 31. The method of claim 29 wherein attaching a propulsion system to the wing includes positioning an engine nacelle under the wing at least approximately laterally aligned with the second fuselage portion.

[c32] 32. The method of claim 29 wherein the wing further includes a trailing edge region, and wherein attaching a propulsion system to the wing includes positioning an exhaust gas outlet aft of the trailing edge region of the wing.

[c33] 33. The method of claim 29, further comprising:
attaching a first stabilizer surface to the fuselage at least proximate to the third fuselage portion; and
attaching a second stabilizer surface to the fuselage at least proximate to the third fuselage portion, wherein the first stabilizer surface extends outwardly from the fuselage at a first location and the second stabilizer surface extends outwardly from the fuselage at a second location that is longitudinally offset from the first location.

[c34] 34. The method of claim 29, further comprising:
attaching a vertical stabilizer to the fuselage at least proximate to the third fuselage portion; and
positioning a fuel tank portion at least approximately within the third fuselage portion proximate to the vertical stabilizer.